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In a system for joining a first vehicle to a second vehicle, said system including a probe mounted on said first vehicle and a paratroque mounted on said second vehicle, said probe being connected to said paratroque for connecting said first vehicle to said second vehicle comprising:

means for generating a beam mounted on one of said vehicles;

means for detecting said beam mounted on the other of said vehicles and measuring the relative motion between the probe and the paratroque;

first means responsive to said detecting means for controlling the relative motion between said probe and said paratroque; and

Second means for controlling the relative motion between the probe and the paratroque when the probe is within the paratroque to restrain relative motion there between.

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The system of claim 1 wherein said one of said vehicles comprises said first vehicle.

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The system of claim 1 wherein said one of said vehicles comprises said second vehicle.

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The system of claim 1 wherein said second means for controlling the relative motion between the probe and the paratrogue includes a cable connected to said probe on one end thereof and a reel mounted on said first vehicle, the other end of said cable being connected to said reel, and means for rotatably urging said wheel to tightly wind said cable there around.

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The system of claim 1 wherein said beam is an optical beam and the means for detecting said beam is an optical sensor,

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The system of claim 1 wherein said second vehicle is a ground vehicle and said first vehicle is airborne..

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The system of claim 3 wherein said cable and said probe form a triangular configuration with the body of said first aircraft

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The system of claim 1 wherein said probe is mounted on said first vehicle on a universal mount.

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A system for refueling a first airborne vehicle from a second airborne vehicle, said system including a probe mounted on said first vehicle and a boom mounted on said second vehicle, said boom having a paratrogue mounted on the end thereof, said probe being connected to said paratrogue, fuel being fed from said second vehicle to said first vehicle from said boom to said probe comprising:

At least one beacon mounted; on one of said vehicles for generating an optical beam;

a detector mounted on the other of said vehicles for measuring the relative motion between said probe and said boom;

a control system for controlling the relative motion between said boom and said probe in response to the output of said detector; and

a mechanism for controlling the relative motion between the probe and the paratrogue when the probe is within the paratrogue including a cable having one end connected to said boom near one end of said boom and a reel mounted on said second vehicle, the other end of said cable being connected to said reel, and means for rotatably driving said reel so as to tightly wind said cable there around.

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The system of claim 9 wherein there is a plurality of said beacons.

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The system of claim 9 wherein the cable, the boom and the body of said second vehicle form a triangular configuration.

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The system of claim 9 wherein said boom is extensible from a retracted position to an extended position.